

Abstract ID : 69

Title : Manatee Winter Movements and Attendance Patterns at a Warm-water Refuge as Revealed by Argos-linked GPS Tags

Category : Behavior

Student : Not Applicable

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Abstract : Florida manatees (*Trichechus manatus latirostris*) require access to warm-water refuges during winter because of their vulnerability to cold-related stress and mortality. We investigated manatee winter movements and attendance patterns at an industrial warm-water refuge in Tampa Bay, Florida, in relation to ambient temperature. We hypothesized that the distance and duration manatees spend away from the refuge should be positively correlated with ambient water temperature. Six manatees were tagged in December 2002 and tracked through February 2003 using state-of-the-art Global Positioning System (GPS) tags that relayed near-real-time and highly accurate movement data through the Argos system. The tags attempted GPS fixes every 20 minutes; the full record of locations (mean=56/day) and temperatures (72/day) was downloaded after tag recovery. The median time to successfully acquire a GPS fix was 19 sec (min=15 sec). The tagged manatees exhibited a pattern of movement and refuge attendance that is characteristic of "central-place foraging" they made regular foraging excursions to seagrass beds within 4-40 km of the power plant and then returned after several hours to a few days to thermoregulate in the heated discharge canal. Time spent away from the refuge increased significantly as ambient water temperature increased. In unusually cold weather, refuging bouts lasted up to 6 consecutive days, during which time the manatees fasted. Manatees exhibited a diel pattern, often arriving in the early morning and departing in the early evening. Distance to foraging grounds was positively correlated with ambient water temperature for some individuals but not for others. Study animals demonstrated remarkable consistency in their daily movements and fidelity to their foraging grounds; daily distance traveled from the power plant varied among individuals (medians of 4-26 km). This new technology provides insights into decisions manatees make to optimize the energetic tradeoffs between foraging in cold water and fasting in warm water.